Viviparous Butterflies.

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In the last part of the *Horae Soc. Entomologicae Rossicae* is a paper by Herr N. J. Kusnezov, unfortunately in Russian, but with a copious explanatory note in English, in which the author records that fully-developed larvæ may be found in the bodies of female butterflies. The species he notes are 21 species of *Colias*, 7 of *Euchloë*, 1 of *Zegris*, and 1 of *Leptidia*.

The larvæ were not, however, found in the bodies of living butterflies, but by maceration of the bodies of preserved specimens. This is clearly a matter worth further investigation.

We are unacquainted with any record of a butterfly having "laid" a larva, or even an egg with a larva in any state of development contained in it.

There is, however, a fact often observed both by Mr. Tutt and myself, and I think reported somewhere by one or both of us, that many butterflies are found after death to have an egg ready to extrude in the ovipositor, and from such an egg more than once a larva has hatched under my observation. We have observed this most frequently in the genus *Erebia*, chiefly because Erebias are often difficult to induce to lay eggs, and often die without doing so, and an attempt to obtain an egg for examination from the dead butterfly has revealed the fact of one egg being ready for extrusion; very rarely is there another behind it. Everyone has observed how many moths after being killed, but with the abdomen still more or less active, will lay a number of eggs, without, of course, the usual incentives of foodplant under proper conditions, etc. These butterflies seem to be in much the same case. The desire to lay takes effect after the butterfly is dead, and when no proper control exists over the still living abdominal organs, and in these the result is not a complete result as in the moths cited, but the egg remains in the ovipositor. It has, however, passed the spermathecal orifice and is fertilised.

As an explanation of Herr Kusnezov's remarkable observation, I think it highly probable that in the species he has examined precisely the same process is gone through as in the Erebias. An egg is advanced past the spermathecal orifice and remains unextruded.

Herr Kusnezov gives drawings (and very good ones) of his preparations, showing one larva only in each instance, doubled up in what is almost certainty the eggshell, lying in the tube immediately behind the opening of ovipositor. Herr Kusnezov calls the place where it lies an "uterus," but clearly there is here no expansion of the tube, the egg fills it up precisely as it must do when it passes this spot in ordinary oviposition. The author does not note the egg-shell, but this is extremely transparent in these Coliads, etc., and would probably be invisible in his preparations.

The remarkable point, then, in Herr Kusnezov's observations is, that these fertilised, but just not-laid eggs, can undergo development in this incarcerated position, just as if they were external. It is not quite parallel with any case of actual viviparity, since no actual laying of the developed egg takes place. Nevertheless, it is not without some analogy with those *Muscidae* that are unable to retain the eggs in the oviduct, but pass them to a quite homologous place, to where these eggs